

**WHAT IS CLAIMED IS:**

1. A method for reducing the effects of printhead carrier disturbance during printing with an imaging apparatus having a printhead carrier for carrying at least one printhead, comprising the steps of:
  - accelerating said printhead carrier from a first position in a first direction;
  - 5       printing with said printhead in said first direction; and
  - changing a rate of acceleration of said printhead carrier for a subsequent accelerating of said printhead carrier from said first position in said first direction prior to a subsequent printing with said printhead in said first direction to phase shift said printhead carrier disturbance.
2. The method of claim 1, said rate of acceleration being determined based on a frequency of said printhead carrier disturbance.
3. The method of claim 1, wherein said first position is a carrier start position.
4. The method of claim 1, wherein said rate of acceleration for said subsequent accelerating of said printhead carrier is greater than a previous rate of acceleration of said printhead carrier.
5. The method of claim 1, wherein said rate of acceleration for said subsequent accelerating of said printhead carrier is less than a previous rate of acceleration of said printhead carrier.
6. The method of claim 1, said printhead carrier being accelerated from said first position in said first direction to achieve a same steady state velocity, regardless of said rate of acceleration.
7. The method of claim 1, wherein said first direction is one of two opposing directions of a bi-directional main scanning direction of said printhead carrier.

8. A method for reducing the effects of printhead carrier disturbance during printing with an imaging apparatus having a printhead carrier for carrying at least one printhead, comprising the steps of:

5 on a present pass of said printhead across a print medium, accelerating said printhead carrier from a first position in a first direction at a first rate of acceleration; printing with said printhead on said present pass;

10 on a subsequent pass of said printhead across said print medium, accelerating said printhead carrier from said first position in said first direction at a second rate of acceleration different from said first rate of acceleration; and printing with said printhead on said subsequent pass.

9. The method of claim 8, selecting said first rate of acceleration and said second rate of acceleration to phase shift said printhead carrier disturbance.

10. The method of claim 8, said first rate of acceleration and said second rate of acceleration being determined based on a frequency of said printhead carrier disturbance.

11. The method of claim 8, wherein said first position is a carrier start position.

12. The method of claim 8, wherein said second rate of acceleration is greater than said first rate of acceleration.

13. The method of claim 8, wherein said second rate of acceleration is less than said first rate of acceleration.

14. The method of claim 8, said printhead carrier being accelerated from said first position in said first direction to achieve a same steady state velocity on each of said present pass and said subsequent pass.

15. A method for reducing the effects of printhead carrier disturbance during printing with an imaging apparatus having a printhead carrier for carrying at least one printhead, comprising the steps of:

- 5 defining a printable region for printing on a print medium, said printable region having a print start position and a print end position, said print start position and said print end position defining an extent of said printable region in a main scanning direction of said printhead carrier;
- defining a carrier start position outside said printable region;
- on a present pass of said printhead across said print medium, accelerating said printhead carrier from said carrier start position in a first direction toward said print start position at a first rate of acceleration;
- 10 printing with said printhead on said present pass;
- on a subsequent pass of said printhead across said print medium, accelerating said printhead carrier from said carrier start position in said first direction toward said print start position at a second rate of acceleration different from said first rate of acceleration; and
- 15 printing with said printhead on said subsequent pass.

16. The method of claim 15, wherein said printhead carrier reaches a steady state velocity at said print start position.

- 17. The method of claim 15, further comprising the step of:
  - determining a frequency of said printhead carrier disturbance; and
  - said first rate of acceleration and said second rate of acceleration being determined based on said frequency of said printhead carrier disturbance to phase
- 5 shift said printhead carrier disturbance.

18. The method of claim 15, said printhead carrier being accelerated from said first position in said first direction to achieve a same steady state velocity on each of said present pass and said subsequent pass.

19. The method of claim 15, said printhead carrier being accelerated from said first position toward a predetermined fixed position in said first direction to

achieve a same steady state velocity on each of said present pass and said subsequent pass.

20. The method of claim 19, said first position being a carrier start position and said predetermined fixed position being a print start position.

21. An imaging apparatus, comprising:

a printhead carrier system configured to drive a printhead carrier carrying at least one printhead along a bi-directional main scanning direction across a print medium; and

5 a controller communicatively coupled to said printhead carrier system, said controller executing instructions to perform the steps of:

on a present pass of said printhead across said print medium, accelerating said printhead carrier from a first position in a first direction at a first rate of acceleration; printing with said printhead on said present pass;

10 on a subsequent pass of said printhead across said print medium, accelerating said printhead carrier from said first position in said first direction at a second rate of acceleration different from said first rate of acceleration; and printing with said printhead on said subsequent pass.

22. The imaging apparatus of claim 21, further comprising a feed roller unit communicatively coupled to said controller, said controller executing instructions to perform the step of controlling said feed roller unit to advance said print medium in a sheet feed direction between said present pass of said printhead and said subsequent  
5 pass of said printhead.

23. The imaging apparatus of claim 21, said controller executing instructions to perform the step of selecting said first rate of acceleration and said second rate of acceleration to phase shift a printhead carrier disturbance.

24. The imaging apparatus of claim 23, wherein said phase shift of said printhead carrier disturbance is by one of  $\frac{1}{4}$ ,  $\frac{1}{2}$ , and  $\frac{3}{4}$  of a period of said printhead carrier disturbance.

25. The imaging apparatus of claim 23, wherein for four consecutive passes of said printhead across said print medium in said first direction, said phase shift of said printhead carrier disturbance is in the order of 0,  $\frac{1}{2}$ ,  $\frac{1}{4}$ , and  $\frac{3}{4}$ , respectively, of a period of said printhead carrier disturbance.

26. The imaging apparatus of claim 21, said first rate of acceleration and said second rate of acceleration being determined based on a frequency of a printhead carrier disturbance.

27. The imaging apparatus of claim 21, wherein said first position is a carrier start position.

28. The imaging apparatus of claim 21, wherein said second rate of acceleration is greater than said first rate of acceleration.

29. The imaging apparatus of claim 21, wherein said second rate of acceleration is less than said first rate of acceleration.

30. The imaging apparatus of claim 21, said printhead carrier being accelerated from said first position in said first direction to achieve a same steady state velocity on each of said present pass and said subsequent pass.

31. The imaging apparatus of claim 30, said printhead carrier being accelerated from said first position toward a predetermined fixed position common to each of said present pass and said subsequent pass.

32. The imaging apparatus of claim 31, said first position being a carrier start position and said predetermined fixed position being a print start position.

33. The imaging apparatus of claim 21, wherein the accelerating steps and the printing steps are repeated for a second direction opposite to said first direction.